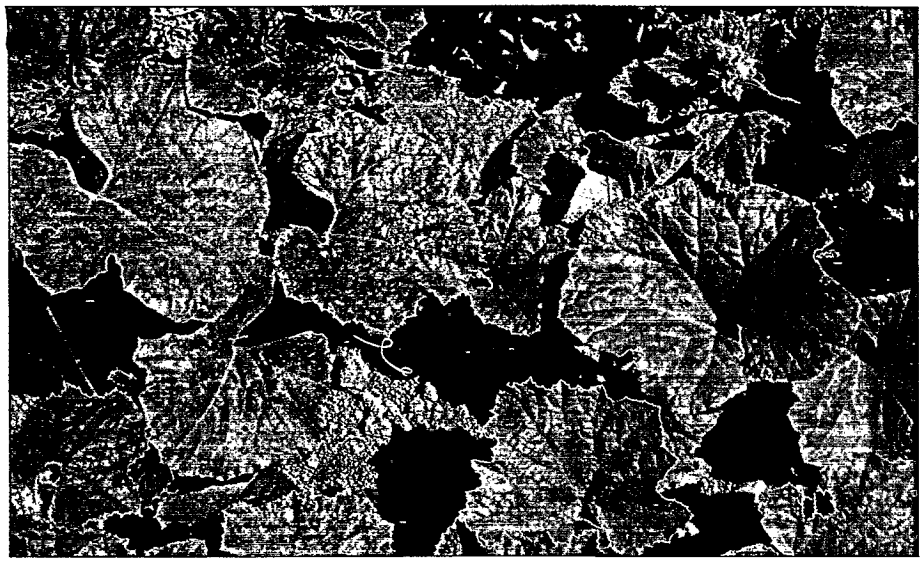

Leaves of honeydew melon plants infected with watermelon mosaic virus showing light and dark green mosaic symptoms.

Honeydew melon plants infected with cucumber mosaic virus showing yellow and green mosaic symptoms along with slight puckering of leaves. Infected plants usually appear stunted.

Stylet oil provides limited control of aphid-transmitted viruses in melons

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Aphid-borne viruses pose a significant threat to California melon growers. Insecticides can kill aphids, but do not prevent the rapid virus transmission. In seven field trials conducted in Davis and the Central Valley, we studied the efficacy of JMS Stylet Oil in reducing the spread and incidence of aphid-transmitted viruses. Stylet oil reduced the incidence and spread of aphid-transmitted viruses when inoculum pressure was low. However, when inoculum pressure was high, the oil did not reduce virus spread to tolerable levels, but delayed initial infection to some degree.

One of the most significant threats to California melon growers is the spread of aphid-borne virus disease. Melons are grown in the Sacramento and San Joaquin valleys in the spring and summer, and only in the spring in the Imperial and Palo Verde valleys. For several years, virus diseases have caused problems in most production regions. The most common and economically important viruses affecting cantaloupe and mixed melons are watermelon mosaic potyvirus (WMV) and cucumber mosaic cucumovirus (CMV) in the north; and zucchini yellow mosaic potyvirus (ZYMV) in desert production areas. Squash mosaic comovirus (SqMV) and the recently discovered cucurbit aphid-borne yellows luteovirus (CABYV) also occur throughout California, but with less frequency. In all cases, the incidence and severity of these viruses are largely unpredictable.

Three of the viruses — WMV, CMV, and ZYMV — are spread from plant to plant by several species of aphid in a non-persistent manner. The virus CABYV, on the other hand, is transmitted in a persistent but non-propagative manner primarily by the cotton-melon aphid, *Aphis gossypii*, and the green peach aphid, *Myzus persicae*. The virus SqMV can be seed-borne but is usually transmitted from plant to plant by the spotted cucumber beetle, *Diabrotica* sp.

Because these viruses are spread by insects, growers have attempted to control the spread of disease by controlling insect vectors with insecticides. This strategy has had limited success, but generally is not effective against non-persistently transmitted viruses. Many species of aphids can transmit viruses such as WMV, CMV and ZYMV in a matter of seconds simply by probing or sampling a plant. Insecticides such as endosulfan (Thiodan 3 EC) can control aphid colonization, but cannot kill the aphids before they transmit the virus to the plant.

Dilute mineral-type oil sprays were first used against non-persistent aphid transmission of viruses in 1962. Although these sprays do not directly affect the aphid vector, as insecticides do, they appear to interfere with the spread of the virus from an infected plant to a healthy one. However, the success of various mineral-type oil sprays has been inconsistent. We evaluated the effectiveness of JMS Stylet Oil (JMS Flower Farms, Inc., Vero Beach, Florida) in controlling WMV and CMV on honeydew melons